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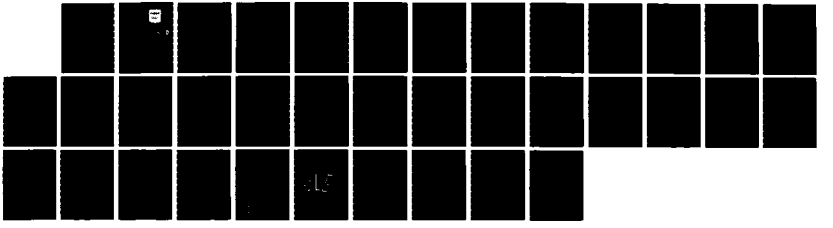

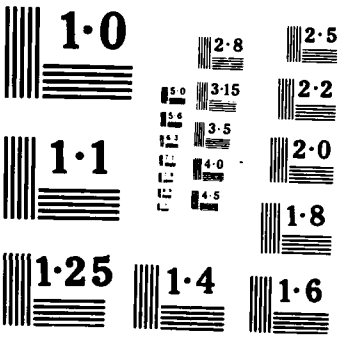
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STUDENT ESSAY

THE DEVELOPMENT AND USE OF CIVIL ENGINEERING SUPPORT PLANS AS AN INTEGRAL PART OF THE JOINT OPERATIONS PLANNING SYSTEM (JOPS)

BY

LIEUTENANT COLONEL MARK W. POTTER, EN

MAY 1986

US ARMY WAR COLLEGE, CARLISLE BARRACKS, PENNSYLVANIA

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The Joint Chiefs of Staff require that a Civil Engineering Support Plan (CESP) be included as a part of all plans for joint military operations. The CESP addresses those construction activities which are required to provide mission essential facilities in support of a contingency operation plan (OPLAN). These facilities can include airports and runways, roads, railroads, waterways, seaports, supply depots, maintenance installations,
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USAWC MILITARY STUDIES PROGRAM PAPER

THE DEVELOPMENT AND USE OF CIVIL ENGINEERING SUPPORT PLANS AS AN INTEGRAL PART OF THE JOINT OPERATIONS PLANNING SYSTEM (JOPS)

INDIVIDUAL ESSAY

by

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ABSTRACT

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The Joint Chiefs of Staff require that a Civil Engineering Support Plan (CESP) be included as a part of all plans for joint military operations. The CESP addresses those construction activities which are required to provide mission essential facilities in support of a contingency operation plan (OPLAN). These facilities can include airports and runways, roads, railroads, waterways, seaports, supply depots, maintenance installations, utilities, administrative facilities, and troop installations. In the past, CESPs have enjoyed mixed credibility with planners and commanders. The complexity of the process and the fact that it is not completely understood by most people are probably primary contributing factors. This essay describes the current procedure for developing CESPs and discusses ways that they are used. A brief discussion of the entire contingency planning process is provided, with a description of how the CESP fits into the system. The software program for developing the CESP, the Civil Engineering Support Plan Generator (CESPG), is explained and a discussion follows on the credibility of the entire process with suggestions for improvement provided.

THE DEVELOPMENT AND USE OF CIVIL ENGINEERING SUPPORT PLANS AS AN INTEGRAL PART OF THE JOINT OPERATIONS PLANNING SYSTEM (JOPS)

INTRODUCTION

What is a Civil Engineering Support Plan (CESP)? If this question were asked of any ten Army officers picked at random, even ten engineer officers, probably nine could not give the correct answer. It is likely that there are many nondivisional engineer units troop listed in a CESP that are unaware of this fact or, more important, unaware of the unit's mission under the CESP.

A CESP addresses those construction activities which are required to provide mission essential facilities in support of a contingency operation plan (OPLAN). These facilities can include airports and runways, roads, railroads, waterways, seaports, supply depots, maintenance installations, utilities, administrative facilities, and troop installations. Taking into account the combat, combat support, and combat service support forces deployed during an operation, civil engineering support planners carefully time phase construction forces and materiel into staging and objective areas to permit timely completion of essential support facilities and installations. The completed CESP is an extremely important document because it is utilized to determine the adequacy of civil engineering support for the first 180 days of a contingency OPLAN, and can highlight critical shortages of engineer manpower or facilities.

In the past, CESP have enjoyed mixed credibility with planners and commanders. The complexity of the process and the fact that it is not completely understood by most people are probably primary contributing

factors. The purpose of this essay is to explain the CESP development process in easily understood terms, examine some of the factors that contribute to the lack of credibility, and offer some suggestions for improvement. The focus will be on U.S. Army aspects of the process.

This paper is divided into two parts. Part 1 describes the background and mechanics of the CESP development process. Part 2, beginning on page 14, contains a discussion of several items affecting CESP credibility, identifies some discrepancies in the system, and offers suggestions for improvement to the system.

PART 1 - CESP DEVELOPMENT PROCESS

REQUIREMENT FOR CIVIL ENGINEERING SUPPORT PLANS

The Joint Chiefs of Staff (JCS) require that a CESP be included as a part of all plans for joint military operations. As prescribed by Joint Operations Planning System (JOPS), Volume I, the CESP is included as appendix 5 to Annex D (Logistics) of a unified command OPLAN. If the OPLAN is executed, the CESP becomes the theater commander's directive for performing construction. The CESP identifies requirements for new construction, expansion of existing facilities, and repair of war damage in order to provide austere, minimum essential facilities for military forces. These requirements are expressed in terms of facility shortfalls, construction man-hours, and materiel quantity and cost.

The CESP is also the mechanism used to translate supply and stockage requirements identified in the OPLAN logistics annex into construction requirements for facilities and installations. Starting with information such

as tons of dry cargo to be stored, gallons or barrels of petroleum to be moved, and troops to be housed, the civil engineering support planner uses established planning factors to generate requirements for various types of storage, troop camps, and maintenance facilities to support deploying forces.

An essential point to note is that the CESP identifies requirements for the first 180 days of a contingency and plans only for the RCZ/COMMZ, not the combat zone. The only engineer units available for CESP construction are those Army units assigned to the Engineer Command, Air Force Prime Beef and Red Horse units at airbases, Navy Construction Battalions (Seabees) at ports and Naval and Marine airbases, and host nation support specified. Neither Army divisional engineers nor nondivisional engineers in direct support of combat operations, nor Marine engineers are available for CESP tasking. Thus, the CESP deals primarily with construction of facilities in the rear area required to support combat operations.

OPLAN DEVELOPMENT

Before going into a detailed examination of the CESP, it is instructive to briefly describe the entire OPLAN development process, and how CESP development fits into it.

The JCS, in the form of policy guidance and mission directives, assign commanders-in-chief (CINC) of unified commands the mission of planning and executing various military operations in consonance with national strategic objectives. The CINCs, through a formal planning process, prepare OPLANs for various contingencies. For any OPLAN, after the CINC has completed his concept of operations and provided guidance to his planners, the Plan Development Phase starts.

The first step of Plan Development is Force Planning. The purpose of Force Planning is to identify and time-phase all the forces needed to support the CINC's concept of operations. Force lists include combat forces, as well as all supporting combat support and combat service support units.

Support Planning, the second step of Plan Development, begins when the number and type of units to be employed in the operation have been identified. Component planners, working with their respective Services, calculate requirements for supplies, equipment, materiel, and replacement personnel to ensure that forces will be sustained in combat. Support Planning is completed when all support requirements have been determined and their movement characteristics have been entered into the time phased force deployment data (TPFDD).

Civil engineering support requirements are calculated during the Support Planning phase. A specialized JOPS ADP program called the Civil Engineering Support Plan Generator (CESPG) assists planners in identifying the facilities needed to support the forces, and to compute manpower and materiel requirements to construct or repair those facilities. Most important, the CESPG provides a tool to assess the capability of the given engineer forces to complete the identified construction by location and time period.

Steps three through six include nuclear, biological and chemical planning, transportation planning, shortfall identification, and transportation feasibility analysis. After these phases are completed, step seven involves TPFDD refinement to ensure that actual units are correct and that unsourced requirements have actual units assigned to them, if available. At this point, the plan and TPFDD can be submitted to the Joint Deployment Agency (JDA) for refinement.

The eighth step is called Plan Documentation. At this point the plan is prepared in JOPS format, to include all required annexes and appendices, resulting in a complete, fully documented OPLAN (including the CESP).

The OPLAN is then submitted to JCS for Plan Review. During this phase, the plan will be analyzed for adequacy and feasibility and either approved, disapproved, or approved for continued planning with guidance provided for rectifying unresolved shortfalls. Disapproved plans, or plans requiring additional effort must be revised and resubmitted to JCS for approval.

The final phase, Plan Maintenance is a process that keeps an OPLAN as up-to-date as possible. The objective is to periodically incorporate changes to deployment data or intelligence that have occurred since the plan was approved or last refined. This is a process that is formally required to be done every four months, but in actuality is only done on an "as required" basis.

ADP DEVELOPMENT

Until the mid 1960's, development of OPLANs was a "stubby pencil" drill that required enormous amounts of time. In order to adequately plan for equipment, materiel, personnel, and transportation requirements, thousands of separate details and calculations had to be worked out, recorded, and tracked. Even minor changes to a plan would necessitate manual rework of much of the supporting calculations. Quite often this resulted in imprecise OPLANs that could, at best, only specify requirements in gross terms. This was not of great concern, since the United States enjoyed strategic superiority, a large conventional force, and relatively unlimited transportation and support resources. Today, things have changed drastically. We are closer to

strategic parity with the USSR and are probably inferior, at least quantitatively, in the conventional matchup. Transportation and support resources are limited. This requires much better management of our limited assets, which fortunately has been made possible by the availability of computer support for planning.

This began in earnest in 1966, when the then Secretary of Defense directed the OJCS to develop a standardized joint operation planning system, and a standardized ADP system to be used in conjunction with the Worldwide Military Command and Control System (WWMCCS) to support the planning system. By 1970 the Joint Operation Planning System (JOPS) had been formally approved.

In 1973, after receipt of new Honeywell 6000 computers, JCS tasked four unified commands to assist in designing portions of the JOPS software.

1. U.S. Readiness Command was tasked to design a program to help planners build and time phase a force list. The resulting software, called the Force Requirements Generator (FRG), allows planners to select, size, and tailor the forces that are needed to support a CINC's concept of operation. The program output is the OPLAN TPFDD.

2. U.S. Atlantic Command was tasked to design a program to simulate the strategic deployment of forces, including their support requirements. This program, called the Transportation Feasibility Estimator (TFE), attempts to "deploy" all of the movement requirements in the TPFDD using the strategic airlift and sealift assets allocated to the CINC for the OPLAN, and calculates the date that each movement requirement could feasibly arrive at its in-theater port. The TFE also produces reports that allow planners to analyze the transportation feasibility of the plan.

3. U.S. Pacific Command was tasked to design a method of computing the support required to sustain a military force. The resulting software, called the Movement Requirements Generator (MRG), computes the amount of non-unit-related cargo and replacement personnel needed to support the forces identified for the OPLAN. The program automatically determines the amount of sustainment needed for the employed force and will time phase the resupply increments and enter them into the TPFDD. Gross numbers of supplies, based on Service planning factors, are computed and expressed in terms of weight and volume measurements.

4. U.S. European Command was tasked to design software to integrate all of the other major programs and make the entire system work.

By 1975 this ADP system for joint operations planning was in operation. Since that time, the three initial JOPS ADP programs have been modified somewhat, and have been supplemented by two additional programs, the Medical Planning Module (MPM) and the CESPG which was designed by a consulting firm under contract to the OJCS.

1. The medical planning module provides medical planners with the capability to determine gross medical support requirements based upon a number of input variables. These include the size of the force-at-risk, expected casualty admission rates, and the command's evacuation policy. The MPM calculates time phased requirements for medical personnel, facilities, equipment, and supplies.

2. The CESPG interfaces with a number of WWMCCS and JOPS ADP files to compare existing facilities against civil engineering requirements, and helps planners determine the amount of engineer manpower and materials needed to construct or upgrade facilities that support the forces in an OPLAN. The program also forecasts the need for repair of war damage.

The entire deliberate planning process is illustrated at Appendix 1. Appendix 2 shows how the five major ADP programs contribute to TPFDD refinement as planning continues.

CESP DEVELOPMENT

In a large Theater of Operations (TO) such as Europe, the CINC, in a transmittal document, normally tasks one or more of his Service components to develop a CESP for a particular area or region of the TO. Each of the other Service components whose forces will be using facilities in that area are required to provide their civil engineering support requirements to the Service component tasked to develop the CESP. The unified command staff, or a designated "executive agent", consolidates the Service CESPs into a single integrated CESP for the TO.

The format for the CESP is specified in Volume I, Chapter 6, of JCS Publication 3, which also describes the logistic responsibilities of the JCS and unified commands and states the policies and principles governing interservice and interdepartmental logistic support.

As previously stated, the CESP is developed with the aid of a JOPS ADP application program, the CESPG. The software system consists of the five program modules described below, plus a set of OPLAN dependent and OPLAN independent data files.

PROGRAM MODULES

1. Analysis Module - This module contains seventeen different programs that analyze the TPFDD troop movement data and display it in 24 different

report formats such as troop arrivals by geographic location, by base, by service, by time, and by unit; engineer units listed; and error reports that point out discrepancies between data files.

2. Requirements Generator - This module consists of seven separate programs that produce engineer requirements by unit allocation; density allocation for personnel, aircraft type, and vehicle type; per base; externally driven by planner input; and repair of war damage. It compares these requirements against existing facilities, and determines new projects to be constructed. Project duration is determined, and the projects are allocated to a specific Service for construction. This information is passed to the Scheduler module, and a printout of required projects is produced.

3. Scheduler - This module computes available engineer manpower (by horizontal, vertical, and other skill man-hours), and allocates that manpower to construction requirements in order of priority. The Scheduler will attempt to optimize existing manpower when a shortage of any particular construction skill exists. The three printouts from this module list all scheduled projects, engineering capability by days into the war, and completed project records.

4. Tabs (Reports) - This module consists of preprocessor, non-unit-related cargo production, tabulation and report generation programs that combine data from several files into one file for report generation. Printed reports display facility requirements, gross Class IV material transportation requirements, engineer requirements, scheduling information, and host nation project assignments in five tabs containing fifteen different formats. A sixth tab report duplicates, by base, the information provided in the first five.

5. Maintenance - This module contains thirteen separate programs used to update, edit, and maintain the CESPG data base files.

FILES

Before the CESPG can be run, OPLAN dependent and independent files must be built to interface with the program. The OPLAN independent files are designed to be used in every CESP development, regardless of geographical location or type of contingency. Generally, OPLAN independent files are maintained by OJCS, J-4, while OPLAN dependent files are maintained by the OPLAN proponent.

OPLAN INDEPENDENT FILES

1. Master - The Master file contains data concerning mission essential facility requirements, by unit type code (UTC), for each unit shown in the TPFDD. This file defines each unit in terms of authorized personnel, type of accompanying vehicles and aircraft, and the JCS facility category codes of facilities authorized for a unit to fulfill its assigned mission. Each Service is responsible for keeping its portion of this file up-to-date.

2. Engineering Unit Capability (ECAPB) - This file describes, by UTC, each U.S. engineer unit that can be tasked for CESP activities in terms of the man-hours of construction skills (horizontal, vertical, and other) that the unit can provide in a 10 hour work day. Each Service is responsible for maintaining its portion of this file.

3. Facility Component - This file contains descriptions of approximately 260 different facility codes available for construction along with the construction requirements (time, skill, and material) necessary to complete

them. The Army portion of this file is based on the Army Facility Component System (AFCS), which is maintained by the Army Corps of Engineers Huntsville, Alabama Division and described in detail in the TM 5-300 series. The AFCS contains plans and bills of material for standard facilities designed for varying climates and for different standards of construction from very austere initial construction to more elaborate temporary construction. Each Service is responsible for submitting information to OJCS, J-4 to keep their respective portion of this file updated.

4. Planning Factors - This file defines planning factors for facility requirements in terms of total base population, aircraft or vehicle type and density, and per person. In some cases, planning factors also differ by Service. This file may not be changed without JCS approval.

OPLAN DEPENDENT FILES

1. Facility Asset - This file identifies existing and available facilities by geographic location in the theater, as well as air war damage factors predicted by air war modeling. The basic facility asset data is compiled from real property inventory files maintained by each Service. The war damage factors can be developed either from intelligence sources or from a non-CESPG program called the Attack Assessment Program. The Facility Asset file is maintained and updated by the Services.

2. Host Nation Asset - This file is identical in format to the Facility Asset file. Asset data is compiled by manual collection of data on facilities for which documented use agreements exist between the U.S. and host nations. This file is maintained and updated by the Services.

3. Cards - The Cards file contains six types of records identified as A, C, D, G, L, and P. They are described briefly below. Each OPLAN requires a separate Cards file. The Cards file is maintained by the OPLAN proponent or executive agent.

a. A-Cards - These cards define base complexing for the area of operations (AOR) by grouping final destination geographic locations (GEOLOCS) in the TPFDD into base complexes, and identify base owners by Service. GEOLOCs are four digit alpha-numeric codes that identify specific geographical locations worldwide. Within the CESPG, all units listed in the TROOP file are assigned to a base complex, and aggregate strengths, by service, are calculated.

b. C-Cards - These cards specify rear echelon base complexes at which backup supply storage requirements will be generated for ammunition, POL, medical, general (rations, clothing, and construction), and other supplies. A C-card record is required to detail the base complex supply storage network for each base complex identified in the A-card records.

c. D-Cards - These cards assign a policy code of 1 (do not build), 2 (build for noncombat units only), or 3 (build for all units) for each of 75 JCS facility category codes at each base complex identified in the A-cards. These JCS Category Codes are listed in Appendix 3. Each Service can define several different facilities within a JCS Category Code as long as they meet the basic definition for the code.

d. G-Cards - These cards identify and define the priority for construction of every JCS facility category listed in the OPLAN for which requirements are to be generated. Construction requirements cannot be generated for facility categories not having a G-card record.

e. L-Cards - These cards allow planners to input externally generated requirements that are not included in the 75 category codes in the D-cards or would not normally be developed by the system (for example, contingency sensitive projects such as initial repair of runway craters, port construction, POL pipeline and distribution facilities, or construction of facilities not normally associated with a particular base or unit).

f. P-Cards - These cards allow planners to reassign construction responsibility for specific facility categories from a CESP generated constructing unit (U.S. military) to a host nation or contractor based on prearranged agreements.

CESPG RUN

Once the data files have been updated, the CESPG is ready to be run. Input for the CESPG consists of the data files and the TPFDD. A TROOP file, developed from the TPFDD, contains records of all units shown in the TPFDD which may generate facility requirements or provide engineering manpower capability. The CESPG computes facility requirements, estimates war damage repair and, after application of existing facility assets, identifies an unconstrained list of required construction projects. These projects are then scheduled for each base complex based on the priority of each project and the engineering capability at the base. A series of fifteen reports are generated that describe time phased facility, material, civil engineering manpower, host nation support, and non-unit cargo transportation requirements. A listing of these Tab reports is included at appendix 4.

Engineer planners review the reports and may choose to develop the CESP or, based on identified deficiencies or errors, go back and revise the input

data. During the development process, periodic conferences are held at the unified command level to discuss OPLAN development and TPFDD refinement. During these conferences, CESP information can also be used to make changes to the TPFDD, drive troop stationing, and change materials flow. If the threat, mission, OPLAN, or TPFDD change during the OPLAN development process, support requirements may change, necessitating another run of the CESPG. Thus, it is an iterative, dynamic process that continues until all shortfalls are either resolved or acknowledged as unresolved shortfalls.

Once complete, the CESP is submitted as part of the draft OPLAN to JCS for review and approval. Civil engineering planners in the Logistics Directorate, OJCS (J-4) are charged with the task of analyzing the submitted CESP and providing additional planning advice to the JCS and CINC. If approved, the OPLAN is returned to the unified command for maintenance and updating. At this point Service components will develop supporting plans.

PART 2 - DISCUSSION AND RECOMMENDATIONS

CESP CREDIBILITY

Several factors have led to questions about the accuracy and credibility of CESP. One criticism often leveled at the CESP process is that it is very complicated and not easy to understand. Contributing to this perception is the tremendous volume of reports produced by the CESPG and attached to the CESP as tabs. It is ironic that, with the advent of computer support, we can be much more accurate in defining needs and capabilities, yet this very fact allows us to produce so much information that it would appear to the uninitiated to be almost unmanageable. Commanders and operational planners do

not want to see thick stacks of printouts; they want summaries that highlight critical factors and "war stoppers". Several things might be done to better "sell" the CESP and improve its credibility.

1. One of the reasons for the thick stack of CESPG printouts is that much of the information is duplicated several times in different formats (see appendix 4) to assist the engineer planner in his analysis. Nowhere is there an "executive summary" that briefly describes for the commander the key engineer factors affecting the OPLAN. Such a summary could be a stand alone document, or a part of the CESP. The 416th Engineer Command is presently experimenting with this idea and developing a format for the summary. When complete, it should be implemented by all Services.

2. Once the CESPG has been run, engineer planners still have to do a lot of manual work analyzing the printouts before producing the CESP. There appears to be a need to modify the existing software, or develop additional software, to help with the analysis and presentation of the analysis. Graphic presentation would make the point more clearly and dramatically.

3. The CESP format should be modified. In the present format, the bulk of the CESP deals with general statements, definitions, construction standards, planning factors, responsibilities for planning, and command relationships. Only at the end of the CESP is there a section for summarizing critical factors affecting the plan. A review of several completed CESPs shows a great deal of difference in level of detail and specificity between different unified commands. In most, there are not much more than generalities in the basic document, with all detail in the tabs. A format that has more "meat" in the basic document, and highlights up front the critical engineer factors that might be "war stoppers", would sell the point better.

The credibility of results from the CESPG is basically a function of the accuracy and completeness of input data. If correct data is not used, a worst case assessment results which overstates requirements. Available facilities must be identified and nonessential categories of facilities eliminated from consideration, otherwise the CESPG will generate an unconstrained list of required facilities that include such items as administrative offices, troop housing, hardened aircraft hangars, or other "comforts" that are not really necessary for the success of the operation. This list will probably be accompanied by a corresponding critical shortage of engineer assets. Such a list would not be taken seriously by anyone. In fact, another common criticism of the CESP is that it is used to justify the need for additional engineers. It is the responsibility of the engineer planner to insure that the data base used in CESP analysis is factual, and that engineer requirements are not exaggerated. This reinforces the need for engineer planners to be intimately familiar with the OPLAN, the area of operations in which it is to be executed, and the CESPG software so that they know what the printouts are telling them. If a CESPG run indicates a shortage of engineer effort, planners need to continue to "scrub" requirements until they are satisfied that only "bare bone" necessities remain.

WHO DEVELOPS CESP?

The commander of each unified command determines who will be the executive agent for CESP development within his command. Normally it is one of the Service components working in coordination with the unified command engineer section, with input provided from other Services and host nation activities. Presently, the USAF is the executive agent for EUCOM, with the 412th Engineer

Command (USAR) having planning responsibility for the Army component (USAREUR) since 1982. The 412th writes the CESP for the Central Region of Europe. The Navy is the executive agent for LANTCOM, with no Army input. The 416th Engineer Command (USAR) has been the executive agent for US Pacific Command since 1983 (including CESP development for US Forces Korea and US Forces Japan), and US Central Command (USCENTCOM)(previously RDJTF) since 1981. The 416th also prepares the CESP input for 3rd US Army, the Army component of USCENTCOM. There has been no CESP developed for SOUTHCOM as of this date.

Developing a credible CESP is not easy. Making sure that all input data is correct is a complicated process requiring detailed knowledge of the AOR being developed, an awareness of the capabilities of the engineer units available, and a knowledge of which facilities are essential. Also required is an intimate working knowledge of the CESPG software in order to make it work properly. This working knowledge does not come overnight.

USLANTCOM, and EUCOM have active duty engineer personnel (Navy and Air Force respectively) doing CESP development. These people are normally on two to four year assignments, and gradually build up a great deal of expertise in CESP. When they rotate, institutic l memory is lost and new personnel must be trained to take their places. This creates a cyclic effect in CESP development, which is affected by the knowledge and experience of the personnel doing the work and the priority they place on it. Additionally, most of the unified command engineer sections are small and have many responsibilities in addition to CESP. Two or three years ago USAFE had very experienced personnel doing CESP development for EUCOM, and was considered to be the leader in the field. They now have new personnel, and are going through a learning curve.

The 416th Engineer Command (USAR), on the other hand, has had basically the same personnel working on CESP since the command assumed responsibility. This has enabled them to build up a great deal of expertise and continuity. With this background, they have also been able to effectively interact on planning issues with other headquarters, specifically the Middle East Division of the Corps of Engineers, the Engineer Studies Center (ESC) at Fort Belvoir, the Naval Facility Engineer Command, the Ninth US Air Force, The Third US Army Engineer Section, Huntsville Division of the Corps of Engineers, and the Eighth US Army in Korea. Another advantage is the fact that the 416th will be the Engineer command exercising the CESP in the event of a USCENTCOM or PACOM contingency. They also work very closely with the unified command staffs, and have conferences with the other Service component staffs to drill for days on the CESP.

The expertise built up over the years by the 416th suggests that a similar arrangement in Europe, with the 412th Engineer Command designated as the EUCOM executive agent for CESP development, would provide a continuity that does not exist now. The 412th, like the 416th, has a group of people dedicated exclusively to CESP development.

LOGISTICS SUPPORT

In some lesser developed theaters, the magnitude of facilities required to support an OPLAN could be a major constraining factor on operational planning. In addition to identifying critical engineer requirements, and the adequacy of engineer support to accomplish them, another important function of the CESP is to identify critical construction materials having long

procurement lead times. The CESP, as part of an approved contingency OPLAN, provides a credible basis for the planning, programing, budgeting, and execution system (PPBES).

However, the CESP does not address the details of materiel supply and distribution. The process assumes construction materials are available when and where needed. It is the responsibility of the logisticians to provide the materials. There are several significant issues concerning logistics support that need to be addressed and resolved.

1. There is a discrepancy in the planning process between the materiel requirements generated by the CESPG and the cargo planning factors used by the logistic planners in their portion of OPLAN development. The intent of the CESPG Non-Unit Cargo Program is to provide a Class IV requirement, in terms of short and measurement tons, that is fed back into the TPFDD to be used by logistic planners. The information also affects materiel timing and flow since it is identified by base complex, POD, POE, and scheduled arrival date. In practice, since the logistic planners are doing their planning concurrently with CESP development, CESPG input for construction materiel is not available to them for planning. The logistic planners have a separate software program and planning factors which do not agree with the planning factors used by the CESPG. There is no direct interface between the CESPG and the Movement Requirements Generator (MRG) or the Transportation Feasibility Estimator (TFE). The result is a set of gross Class IV material requirements in the TPFDD that may not agre[illegible] actual Class IV requirements to satisfy CESP needs.

2. While it is obviously in [illegible]nterest of the unified commands to have critical and long lead time construction materiel identified, procured, and stockpiled for contingencies, it is a Service responsibility to do this.

Unified commands can assist in preparing the justification for procurement but, except for monitoring a few designated critical items such as rapid runway repair materiel, they are not involved in insuring that materiel is procured. The Army is not doing well in this area. Except for some items remaining from Vietnam, there are virtually no construction materials earmarked and prestocked for contingency OPLANs. Failure to procure critical long lead time items may result in inadequate support or costly delays in OPLAN implementation after the operational requirement is at hand. The Army presently has a project called Base Development Operational Project (BADEP), approved by DCSLOG, which would ideally be the mechanism to procure and stock Class IV materiel for contingencies. This is an extremely important area that requires much more emphasis. DCSLOG has Army Staff responsibility in this area.

It would be desirable to have one Army master list complied from all unified command CESPs of critical long lead Class IV items required to support contingencies. It would also be desirable to have these items assembled and containerized in depots by facility, and stockpiled by contingency to be shipped to the TO. At present, the depots are not prepared to do this.

3. There is a need to examine the logistics support in the TO. The CESPG determines facility requirements in terms of the AFCS, which has the capability to break down facilities into national stock numbers (NSNs) for each facility and installation. Troop Support Command (TROSCOM) also has the capability to break down each AFCS category code into its associated NSNs and respective commodity managers. However, within the TO, the logistics support command and its subordinate commands are not prepared to handle AFCS category codes. As a result, each requisition will contain hundreds or thousands of NSNs instead of a few AFCS codes. This issue has been identified by the

Office of the Assistant Chief of Engineers (ACE) in the Pentagon, and they are attempting to resolve it with ODCSLOG.

SOFTWARE

OJCS (J-4), through the Joint Data Systems Support Center (JDSCC), has been doing a good job of keeping the CESPG software up-to-date. A working group has been established that meets every three weeks to address software issues. There are still some areas that need further modification or updating.

1. Component file - The component file must include the most austere construction standards possible to reduce early on facility and lift requirements for civil engineering material. The file was originally constituted to reflect facilities planned for the European theater and, in developing CESP in different unified commands, planners have been required to modify the files to account for unique theater characteristics. In the CENTCOM region, for example, there was a definite need to include more austere and expedient construction facilities to meet engineer planning needs. The 416th Engineer Command, with assistance from the Air Force, the Naval Facility Engineer Command, and Army Corps of Engineers at Huntsville, Alabama, has developed a Southwest Asia component file. JCS Publication 6 allows only one component file and requires it to be maintained by OJCS. Consideration is being given to changing Publication 6 to make this an OPLAN dependent file, allowing unified commands to develop theater unique component files.

2. Planning Factor File - This file was last updated in 1981. It is another OPLAN independent file that was originally developed for a European environment. Consideration should also be given to making this an OPLAN dependent file, allowing unified commands to tailor it to their needs.

3. Man Hour Multiplier - The ECAPB file currently contains man hour figures based on a 10 hour working day in a temperate climate. Engineer capabilities will change in different climates. There needs to be a mechanism for modifying this multiplier for different climates, especially the CENTCOM region.

4. Electrical Generation - All engineer planners seem to be in agreement that the software that develops electrical generation requirements (category code 811A) produces unrealistically high figures for small bases. This problem should be addressed and corrected.

5. War Damage - There also is concurrence that the model for generating war damage factors is not realistic in some theaters. This issue has been recognized by JCS, and is being addressed presently.

6. Master File - This file is supposed to be updated every six months. The Master file contains many more UTCs than the TPFDD, but only units listed in the file can be utilized in the CESPG. The system will not generate Planning Factor File requirements for UTCs not in the Master File. Therefore, the CESPG will ignore a unit added to the TPFDD by planners if it is not in the Master File. Continual emphasis needs to be placed on keeping this file updated.

7. There are many engineer requirements (for example, port construction and repair, road maintenance, bridge repair) that are not included in the CESPG because they do not fit into the 75 JCS category codes in the D-card file. These requirements can be manually input with L-cards, but are not adequately addressed in the Component file. Consideration should be given to expanding the number of JCS category codes to include facilities that may not have been considered necessary for a European environment, but may be desirable to include in the CESPG for other less developed theaters.

CESP TRAINING

At present, there is no formal CESP training course in any of the Services. Because of the complexity of the system, there is a definite need for this to insure that all unified commands are utilizing the CESPG and all data files correctly and consistently. Consideration should be given to designating one service to establish a training course to be taught at least twice a year to all personnel being assigned to jobs requiring intimate knowledge of the CESP.

UNIT TRAINING

At present, there is no mechanism for insuring that nondivisional engineer units included in a CESP are aware of this fact. This may not be important if the unit normally trains on, and is prepared to perform, the mission specified in the CESP. However, if one considers the case, for example, of a combat heavy battalion scheduled to perform primarily port construction or pipeline work in a contingency, there could be significant implications if the unit had never trained in peacetime in these areas. It is important that engineer units are aware of all OPLANs they are included in, and their mission in the OPLAN. This should be the Army component, or Engineer Command responsibility.

CONCLUSION

The CESPG was originally designed as a gross planning tool to provide engineer planners with a list of facilities, and the corresponding engineer effort, required to support a given OPLAN. It has gradually evolved into a fairly detailed analysis of the AOR, modeling the engineer operation very closely. The beauty of the system is that it is objective, and not dependent upon subjective interpretation. Given the same input data, the output can be duplicated by anyone.

The CESP is an extremely important, and essential, document. It does exactly what it was intended to do. The keys to making it more credible, and therefore more useful, are to insure that only absolutely essential engineer requirements are included in the document, and then do a better job of presenting the information to commanders and other non engineers.

Quite obviously, engineer planners cannot develop a CESP in a vacuum. The OPLAN developers, logistic planners, and facility users have to be involved and provide input to insure that the engineers are only planning for minimum essential facilities. As more and more non engineers become involved in CESP development, it will take on more credibility.

BIBLIOGRAPHY

Armed Forces Staff College. Publication 1. Joint Staff Officers Guide.

Defense Technical Information Center. Users Manual. Joint Operation Planning System (JOPS) Civil Engineering Support Plan Generator (CESPG). 15 May 1981.

Interview with LTC Charles Hand, Civil Engineering Planning, Logistics Directorate (J-4), OJCS, Pentagon.

Interview with Major William R. Logel (USAR), 416th Engineer Command (USAR), Chicago, Illinois.

Interview with Mr. Harry Painton, DAEN-ZCM, Pentagon.

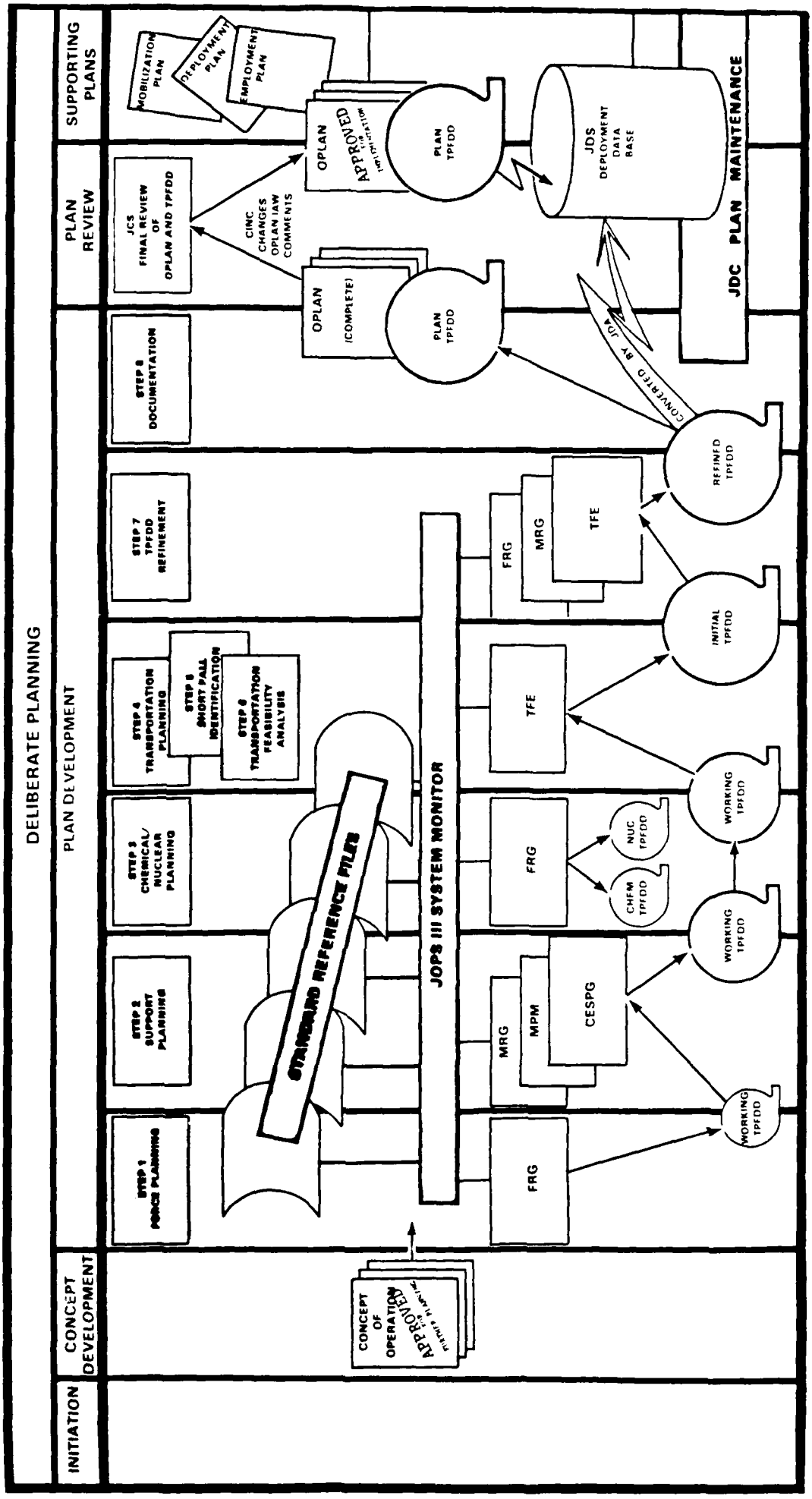
Interview with Mr. Michael, Shama, DAEN-ZCM, Pentagon.

Telephone Interview with Major Neil Hertenstein (USMC), Logistics Directorate (J-4), CENTCOM.

Telephone Interview with Major Rosenblum (USAR), 412th Engineer Command (USAR), Vicksburg, Mississippi.

US Army Engineer School Student Workbook. Civil Engineering Support Planning (CESP), May 1980.

US Department of the Army. FM 100-16. Support Operations: Echelons above Corps. April 1985.



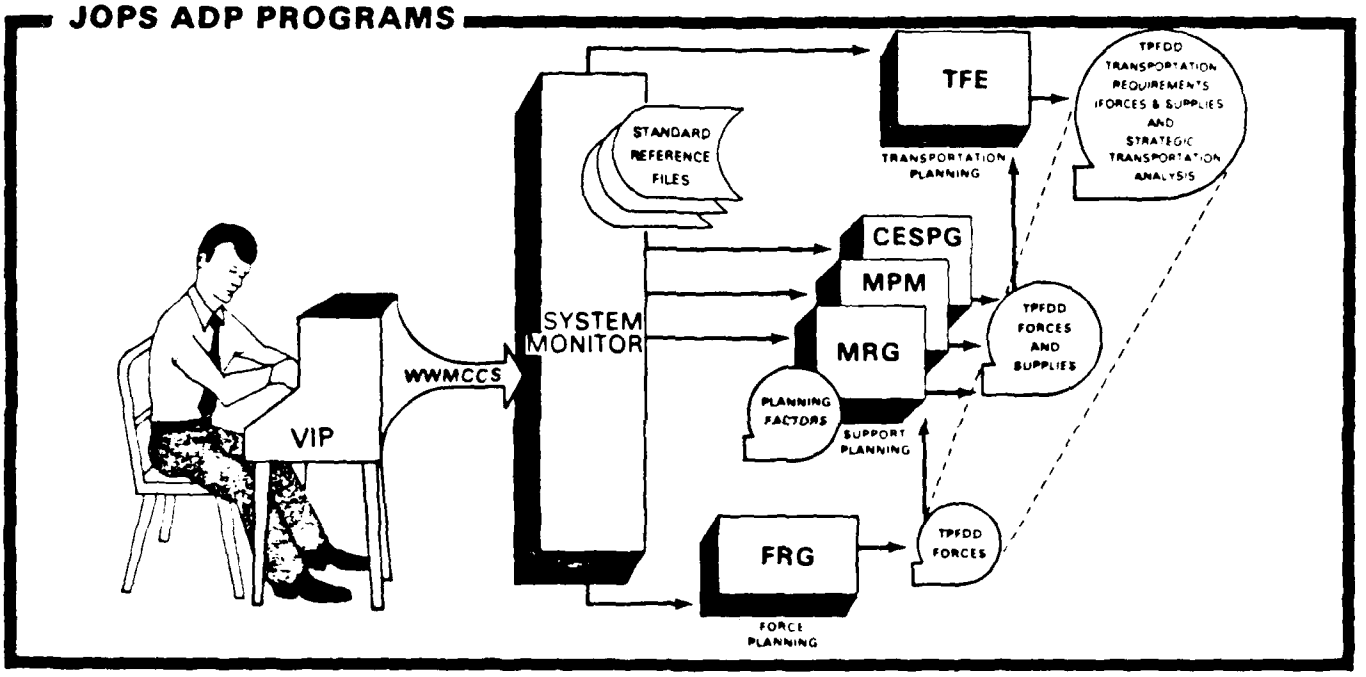
APPENDIX 1

OPLAN
DEVELOPMENT
PROCESS

Source:
AFSC Pub 1
Appendix IV,
Chart 5

APPENDIX 2

OPLAN ADP SUPPORT



Source: AFSC Pub 1, Page 8-9

APPENDIX 3

JCS CATEGORY CODE LEGEND

PLANNING FACTOR INDEX	CATEGORY CODE	DESCRIPTION
1	113A	Aircraft Parking Apron
2	116A	Aircraft Wash Rack
3	116B	Aircraft Comp Cal Pad
4	116C	Arm/Disarm Pad
5	121A	A/C Fuel Dispensing (Hydrant)
6	121B	A/C Truck Fuel Facility
7	124C	Land Vehicle Operating Fuel Storage
8	131A	Communications Center
9	133A	Control Tower
10	141B	EOD Facility
11	141D	A/C Shelter, Hardened
12	141E	Squadron Air Operations Facility
13	141H	Cryogenic Facility
14	141I	POL Operations Facility Lab
15	141K	Photographic Lab
16	141L	Base Operation Facility
17	141M	Air Freight Terminal
18	141N	Air Passenger Terminal
19	149A	A/C Revetment
20	149B	A/C Arresting Barrier
21	149E	Structure Revetment
22	211A	Maintenance Hangar
23	211B	Reclamation Shop
24	211C	Aircraft Weapon Calibration Shop
25	211D	Aircraft Organizational Maintenance Shop
26	211E	Aircraft Engine Inspection and Repair
27	211F	General Purpose A/C Maintenance Shop
28	214B	DS/GS Auto Vehicle Shop
29	214C	Refueler Shop
30	215A	Weapons Maintenance Shop
31	216A	Ammunition Maintenance Shop
32	217A	Communications/Electronics Shop
33	217B	Avionics Shop
34	218C	Ground Support Equipment Shop
35	218D	Parachute/Dinghy Maintenance Shop
36	219A	Installation Public Works Facility
37	411B	AV Gas Storage
38	411C	Diesel Storage
39	411D	MOGAS Storage
40	411E	JP Storage

JCS CATEGORY CODE LEGEND (CONT)

PLANNING FACTOR INDEX	CATEGORY CODE	DESCRIPTION
41	411F	Heating Fuel Storage
42	411H	Liquid Fuel Storgage
43	421A	Ammo Covered Storage
44	422A	Ready Ammo Storage
45	425A	Ammo Open Storage
46	431A	Depot Cold Storage
47	432A	Installation Cold Storage
48	441A	Depot Covered Storage
49	442A	Installation Covered Storage
50	451A	Depot Open Storage
51	452A	Installation Open Storage
52	510A	In Patient Facility
53	540A	Dental Facility
54	550A	Out Patient Facility
55	610A	Administration Facility
56	721A	Enlisted Troop Housing
57	722A	Enlisted Troop Dining
58	724A	Bachelor Officers Quarters
59	725A	Emergency Troop Housing
60	725B	Emergency Troop Messing
61	730A	Fire Station
62	730B	Confinement Facility
63	811A	Electricity Source
64	812A	Electricity Distribution Lines
65	831A	Sewage Treatment
66	124A	Fuel Storage, Aircraft Operations
67	841A	Water Source
68	841B	Water Treatment
69	841C	Water Storage
70	842A	Portable Water Distribution Lines
71	851A	Roads
72	852A	Paved Parking
73	111R	Runway
74	112R	Taxiway
75	141Q	Aircraft Shelter Hard Doors

APPENDIX 4

CESPG TAB REPORTS

TAB	REPORT
A	Facility Requirements
A-1	Summary of Facility Requirements (by Service)
A-2	Base Deficiencies
A-3	Facility Requirements, Assets, and Deficiencies by Base Complex
A-4	Civil Engineering Facility Projects time-Phased by Base Complex
B	Class IV Material Summaries
B-1	Consolidated Material Requirements (by time period and constructing Service)
B-2	Time-Phased Material Requirements by Base, by using Service
B-3	Material Requirements Time-Phased by Base, by Service
B-4	Consolidated Material Requirements Time-Phased by Service
C	Engineer Requirements
C-1	Time-Phased Civil Engineering Force Requirements (Areawide)
C-2	Time-Phased Civil Engineering Force Requirements (Planning Area Totals by Project Class)
C-3	Time-Phased Civil Engineering Force Requirements by Base
C-4	Time-Phased Civil Engineering Force Requirements by Project Class by base
D	Engineer Requirements in 30 day blocks
D-1	Percentage of High 30 day Average by Category Code
D-2	Percentage of 30 day Averages by Category Code
E	Facilities Projects Identified for Host Nation Accomplishment

END

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